

Notice of Allowability

Application No.

10/753,071

Applicant(s)

NARITA ET AL.

Examiner

Art Unit

Henry S. Hu

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE of April 18, 2007.
2. ☒ The allowed claim(s) is/are 4-9, 11-16 and 20-22.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in two telephone interviews with **J. D. Evans (registration # 26,269, tel: 202 624-2845) on June 4 and 6, 2007** to amend Claims 9 and 13 as well as to cancel non-elected Claims 1-3 (Group I) and Claims 18-19 (Group III) as following:

Claim

Claim 9 at line 2 please replace the phrase of "R¹ comprises" with the phrase of "R¹ is a bivalent group comprising"

Claim 13 at line 2 please replace the phrase of "R¹ comprises" with the phrase of "R¹ is a bivalent group comprising"

Claims 1-3 and 18-19 please cancel Claims 1-3 and 18-19

DETAILED ACTION

2. This Office Action is in response to **RCE request along with previous Amendment** (after Final) filed on September 18, 2006 and April 18, 2007 respectively. With such an amendment (after final), only the claim status identifier of Claim 1 was corrected; Claims 10 and 17 were previously cancelled, while no claim was further cancelled or added. The use of Examiner's Amendment is to amend the improper Claims 9 and 13 as well as to cancel non-elected Claims 1-3 (Group I) and Claims 18-19 (Group III). **Claims 4-9, 11-16 and 20-22** with two independent claims (**Claim 4, Claim 11**) are now pending. An action follows.

3. Claim rejections under 35 USC 103 rejections in previous **Final** Office Action filed on March 17, 2006 are now removed for the reasons given in paragraphs 4-9 thereafter.

Allowable Subject Matter

4. Claims 4-9, 11-16 and 20-22 are allowed.

5. The following is an examiner's statement of reasons for allowance: The above Claims 4-9, 11-16 and 20-22 are allowed over the closest references:

6. The limitation of parent **Claim 4** relates to a fluorine-containing polymerizable monomer comprising a substituent represented by the formula 1, where **R¹** is (a) a straight-

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chain alkylene group or a branched alkylene group, (b) a cyclic structure containing an aromatic ring group or aliphatic cyclic group, or (c) a substituent containing an aromatic ring group and an aliphatic cyclic group, and R^1 optionally contains fluorine, another halogen, CN, oxygen, nitrogen, silicon, or alcohol, and R^2 is a hydrogen atom, a straight-chain or branched alkyl group, an aromatic group, or a hydrocarbon group optionally containing an aliphatic cyclic group, and R^2 optionally contains fluorine, oxygen, nitrogen, carbonyl bond, or alcohol, and a plural number of R^2 having different structures are optionally contained in the molecule. Other parent **Claim 11** relates to polymers comprising units from monomers of parent Claim 4.

See other limitations of dependent Claims 5-9, 12-16 and 20-22.

7. Applicants have now claimed in each of two parent **Claims 4 (monomer) and 11 (polymer)** an unexpected way of obtaining fluorine-containing monomers and/or its polymers comprising a substituent represented by the formula 1 having a specific group of $-O-R^1-CF_2-CH(CF_3)OR^2$ with a particular combination of R^1 and R^2 as specified.

In a very close examination, all four 103(a) rejections cannot stand as follows: Each of the two primary references including **Ohmori and Suzuki** only carries a formula of $-O-R^1-CF_2-CF(CF_3)OR^2$, which is quite different from the claimed formula (1), $-O-R^1-CF_2-CH(CF_3)OR^2$. Even the difference is only a hydrogen atom, **Examiner 's TOTAL rely on secondary reference Mowrer** to teach the replacement of F on $-O-R^1-CF_2-CF(CF_3)OR^2$ with H so as to become the claimed $-O-R^1-CF_2-CH(CF_3)OR^2$ is **improper** since a motivation to link is lacking (see page 19 bottom of Remarks).

8. The key argument (as pointed out by the Applicants) is that All of Mowrer's fluoroalcohols are reactive toward silicon so as to form Si-O-C bond according to the disclosure on column 9, line 19-34 and column 16, line 30. However, Ohmori and Suzuki's formula $-O-R^1-CF_2-\underline{CF}(CF_3)OR^2$ has the oxygen atom bound to the underlined fluorine atom is protected by the R^2 group from further reaction. In summary, Ohmori and Suzuki's $-O-R^1-CF_2-\underline{CF}(CF_3)OR^2$ is unreactive and is therefore distinguished from Mowrer's reactive fluoroalcohols.
9. In order to be further distinguished from prior art, Applicants have determined that the properties of the claimed compounds having the group of $-O-R^1-CF_2-\underline{CH}(CF_3)OR^2$ are superior to compounds comprising the comparative $-O-R^1-CF_2-\underline{CF}(CF_3)OR^2$ group. The properties may include at least four things including: (i) water repellency, (ii) alkali aqueous solution compatibility (solubility), (iii) chemical stability, and (iv) etching resistance (see page 14 at top section of Remarks).
10. It is known in the art that even the difference is only one carbon atom in the composition or a tiny extra step in the making, the final polymeric products can be with very much different properties. Additionally, it may take tremendous effort in organic synthesis so as to "possibly" achieve the compound/polymer with such a chemical structure. Finally, the present invention has already shown unexpected results in examples along with some control examples for making such a compound and/or polymer (see pages 19-27 for examples 1-9 with

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control and Table 1). Therefore, all the above-mentioned references, in combination or alone, does not teach or fairly suggest the limitations of present invention.

11. After further examination and search, the examiner found the following prior art did not teach the claimed limitation: **USPG-PUB 2002/0028886 A1 to Abe et al.** only discloses the preparation of a PVDF copolymer through a free radical induced aqueous emulsion polymerization with the presence of a chain transfer agent and a thermal initiator (abstract, line 1-15; pages 4-5, paragraphs 70-79). Although some co-monomers are used, key claimed monomers are not used or suggested. Therefore, Abe fails to teach or fairly suggest the limitation of present invention.

12. The key issue that Examiner 's TOTAL rely on secondary reference Mowrer to teach the replacement of F on $-O-R^1-CF_2-\underline{CF}(CF_3)OR^2$ with H so as to become the claimed $-O-R^1-CF_2-\underline{CH}(CF_3)OR^2$ is improper, such an exchange cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

13. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the above references to render the present invention anticipated or obvious to one of the ordinary skill in the art. Therefore, the two independent **Claims 4 and 11** are allowed for the reason listed above. Since the prior art of record fails to teach the present invention, the remaining pending dependent **Claims 5-9, 12-16 and 20-22** are passed to issue.

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14. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

14. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Henry S. Hu



Patent Examiner, Art Unit 1713, USPTO

June 11, 2007



DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700